

National Aeronautics and  
Space Administration



# EXPLORE EARTH

Earth Science Division  
ECOSTRESS Mission Extension and ISS Site  
Accommodation

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# 2020 Senior Review Findings

- ECOSTRESS is the first mission to sample the diurnal cycle of estimated evapotranspiration at fine spatial resolutions, albeit over several sequential days; it potentially can play a crucial role in understanding carbon cycle feedbacks to water cycle variability and societal applications, including drought monitoring, agriculture, urban heat islands, fire management, disease transmission, and ecosystem habitat.
- ECOSTRESS also provides critical pathfinding data for the future Surface Biology and Geology (SBG) Designated Observable recommended by the 2017 Decadal Survey.
- With an additional 3-6 years of data, ECOSTRESS will be able to provide derived products that can track not only how ecosystems respond to water stress, particularly through changes in diurnal water use, but how those responses change with time. These global-scale, climate-scale, ecosystem responses to a changing water cycle are critical for constraining climate model uncertainties with respect to biome sensitivity to possible tipping points into the future.

Adjectival Summary Science Score	Utility Score	Technical Risk	Cost Risk
Excellent	High	Medium	Medium-Low

A decorative graphic on the left side of the slide features a curved white border. Inside this border, there is a vibrant space scene with a bright yellow sun at the bottom left, a blue and white Earth at the bottom, and various celestial bodies including a brown planet, a grey crescent moon, and a ringed planet (Saturn) in the upper portion. The background is a deep blue space filled with stars and nebulae.

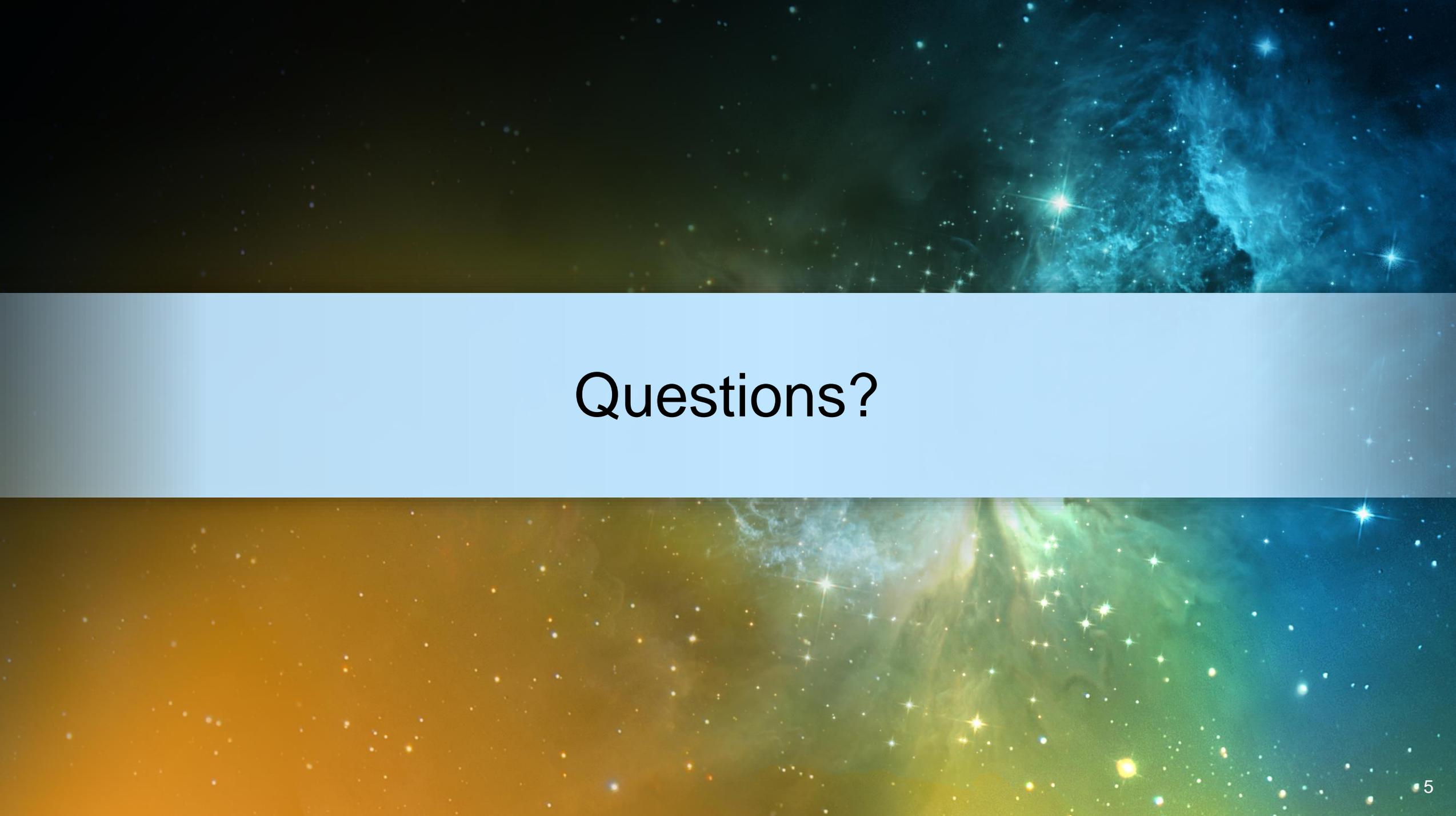
# 2020 Senior Review Results

- ESD uses the Senior Review assessments along with other programmatic considerations to formulate the mission programmatic directions for the extension period.
- In several cases, Agency budget constraints limited ESD to partial or phased implementation of the findings.
- Due to the JAXA request that ECOSTRESS be removed to allow for the installation of ISEEP-1, ESD formally approved an extension through FY21.
- Further mission extensions were to be revisited during the annual budgeting process as long as the instrument remains healthy and the International Space Station (ISS) site is available.



# Mission Extension Request - Where are we now?

- ESD informed the ISS Program that we would like to extend ECOSTRESS at Site 10 on the Japanese Experiment Module – Exposed Facility (JEM-EF) as long as the site is available, and the instrument remains healthy.
- We were planning for a removal of ECOSTRESS to accommodate the iSEEP-1 installation sometime in January of 2023.
- In early August, JAXA informed the ISS Program that the iSEEP-1 payload has been rescheduled/replanned and ECOSTRESS can remain on site 10 through September 2023.
- The JEM-EF is currently fully manifested.
- ESD and the ESSP Program Office will continue to advocate for ECOSTRESS during our regular ISS coordination meetings.

The background of the slide is a composite of two cosmic images. The top half features a dark blue and black space filled with numerous small stars and a prominent, bright blue nebula on the right side. The bottom half features a gradient from orange to green, with a large, bright green nebula on the right and many smaller stars scattered throughout. A light blue horizontal band is positioned in the center, containing the text.

Questions?